



# *Fashion Recommender System for H&M*

Using  
Natural Language Processing

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## Introduction

**H&M** (Hennes & Mauritz) is one of the world's largest fashion retailers

Founded in Sweden in 1947, H&M operates in over 75 countries with more than 4,000 stores worldwide, along with a strong online presence. It is a globally recognized brand, particularly popular among younger shoppers seeking fast fashion options.

## ***Problem Statement***

Improving the Online Shopping Experience with Smart Fashion  
Recommendations



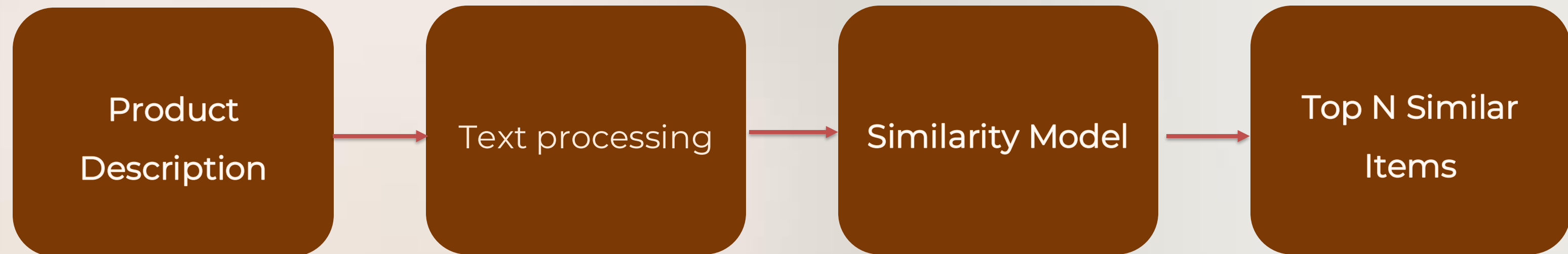
## **Description:**

Short, A-line dress in jersey with a round neckline and V-shaped opening at the front with narrow ties. Long, voluminous raglan sleeves and wide cuffs with covered buttons.

## Hypothesis

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We believed that product descriptions contain rich enough information to recommend items that are stylistically similar — even without using images or manual tags



# Data Set Overview

1.

*Articles*

*DF*

Shape:  
(105542, 25)

2.

*Transactions*

*DF*

Shape:  
(31788324, 5)

3.

*Customers*

*DF*

Shape:  
(1371980, 7)

# *Data Cleaning*

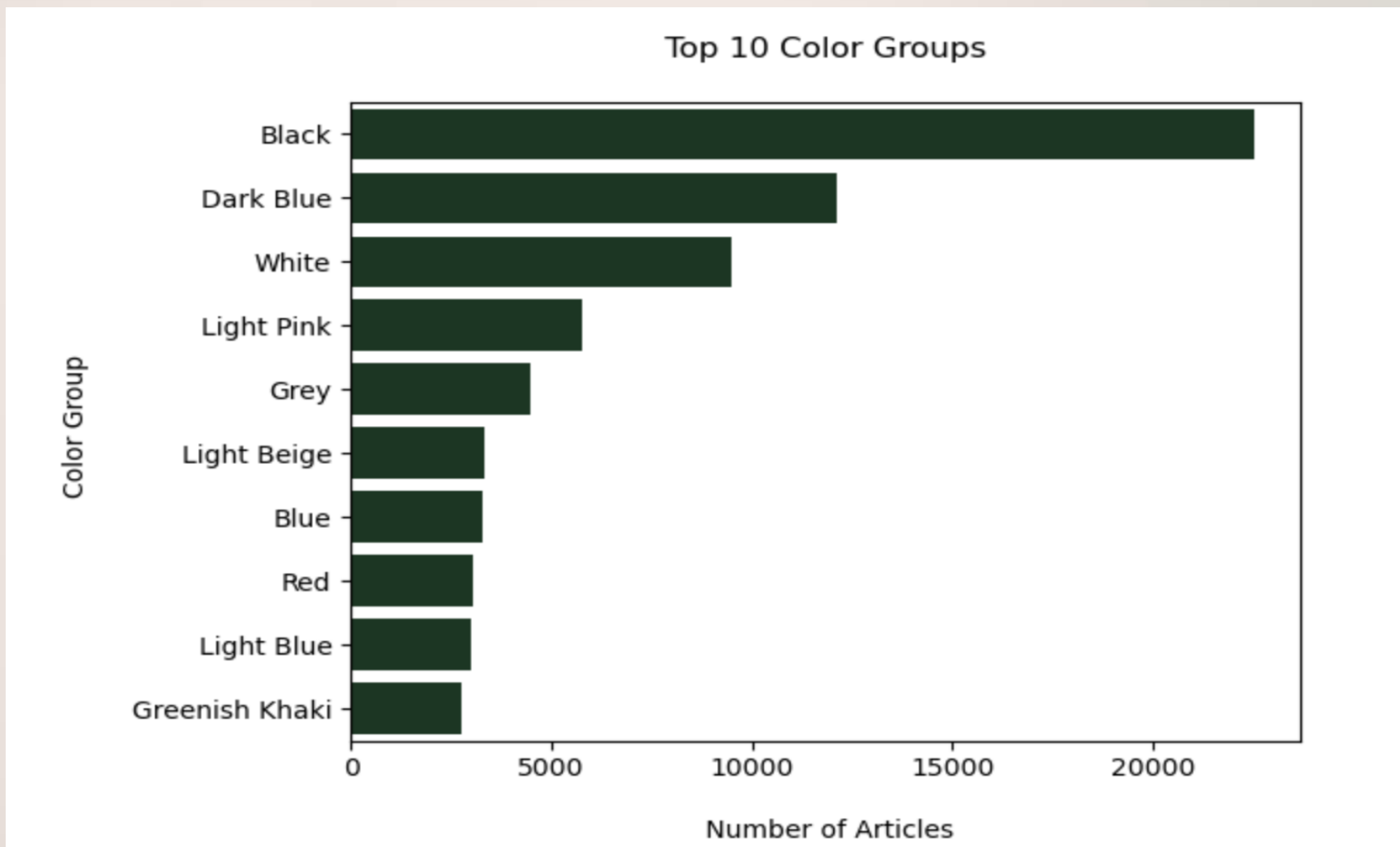
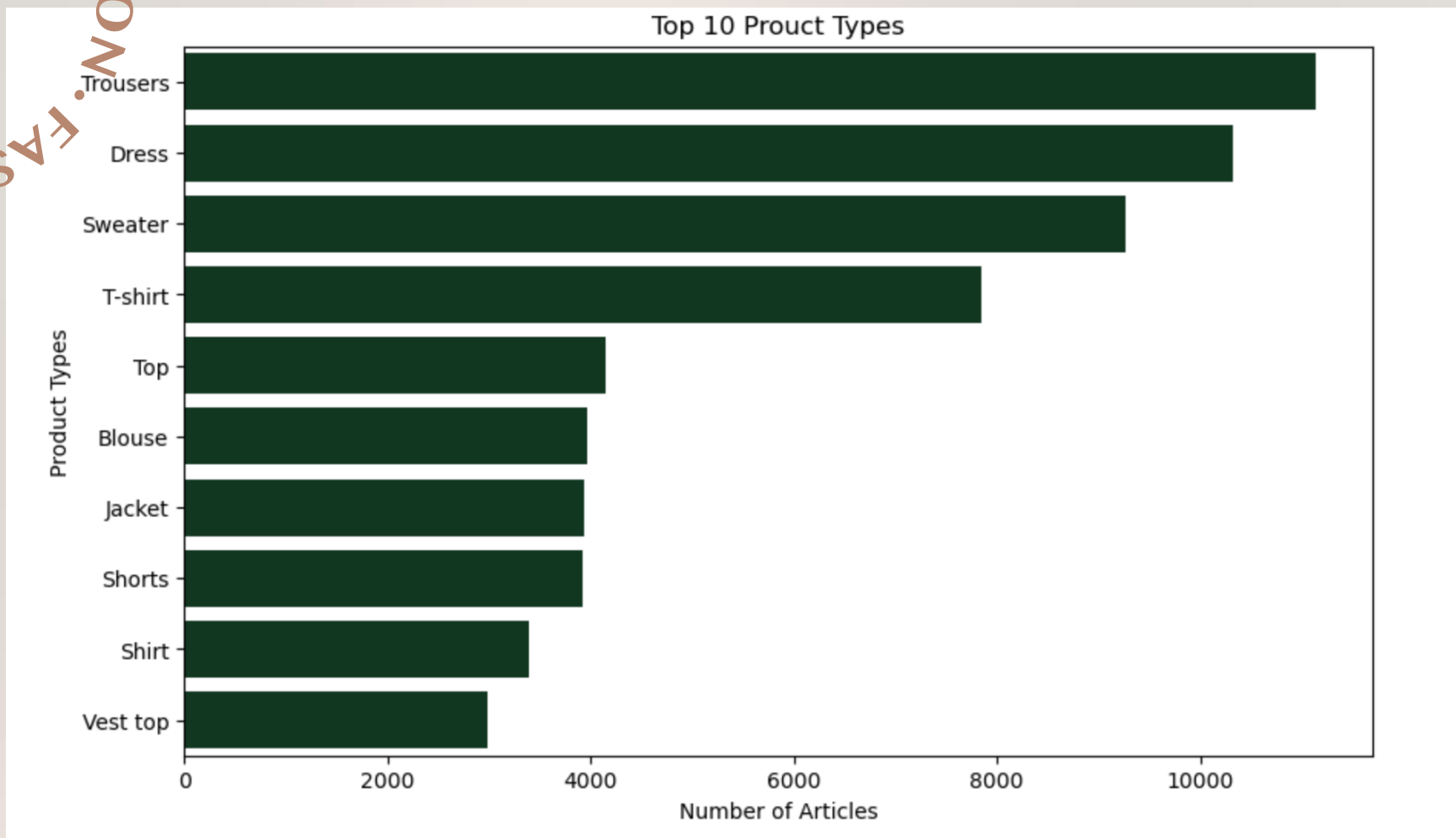
Removed missing  
descriptions.

Converted all text to  
lowercase

Removed  
punctuation,  
numbers

Removed common  
filler words like “the”  
or “and”

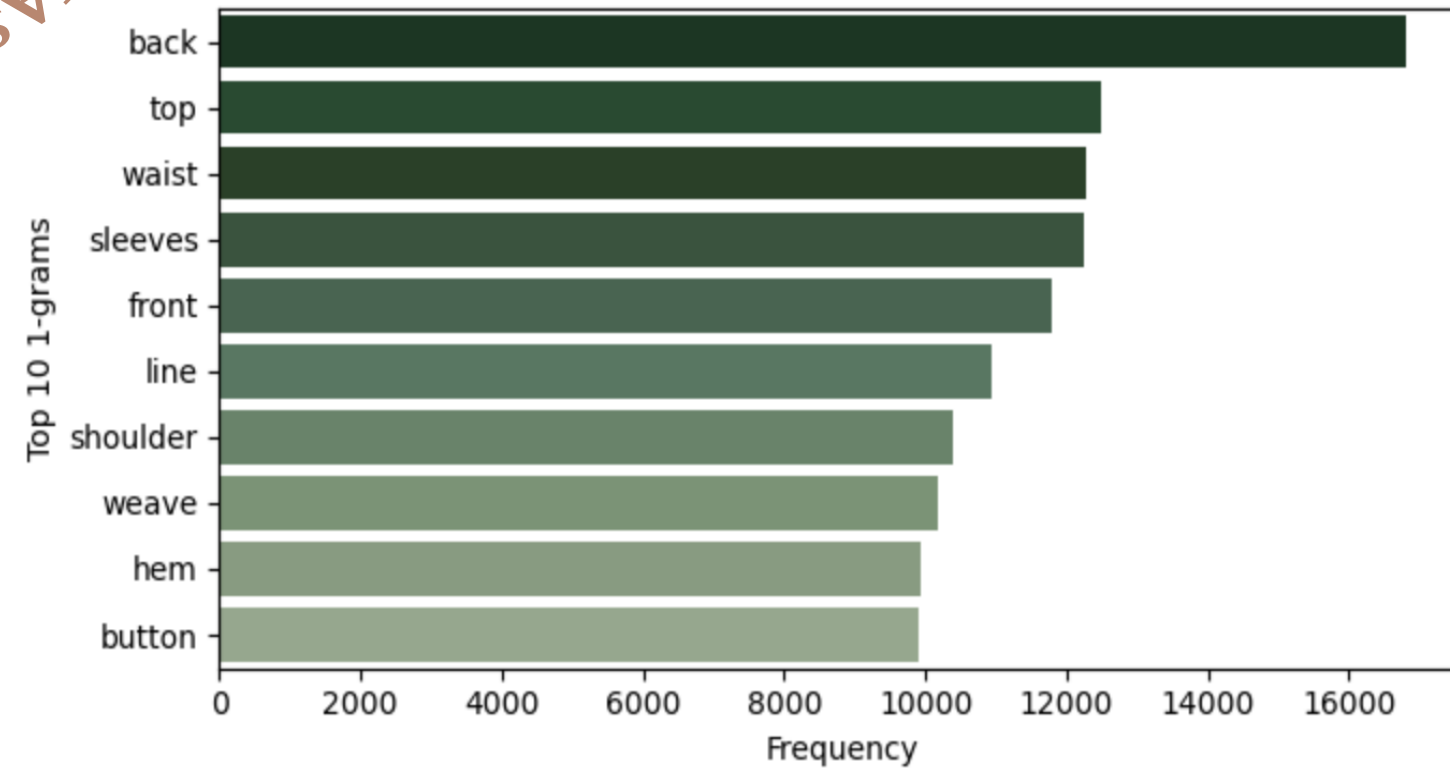
Simplified words to  
their root form (e.g.,  
“running” became  
“run”)



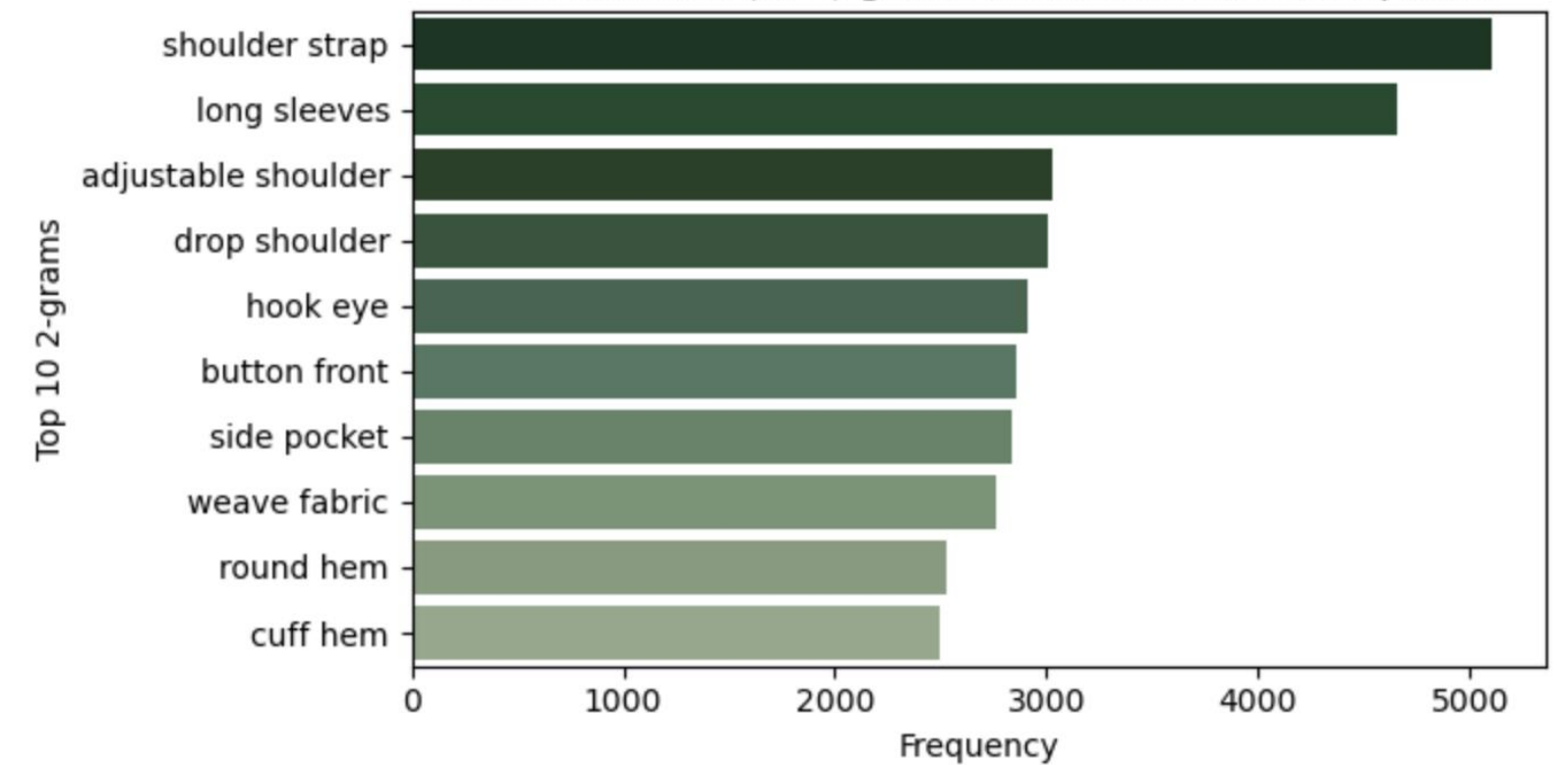
# Exploratory Data Analysis

Before modeling, we explored the text data to better understand common fashion patterns.

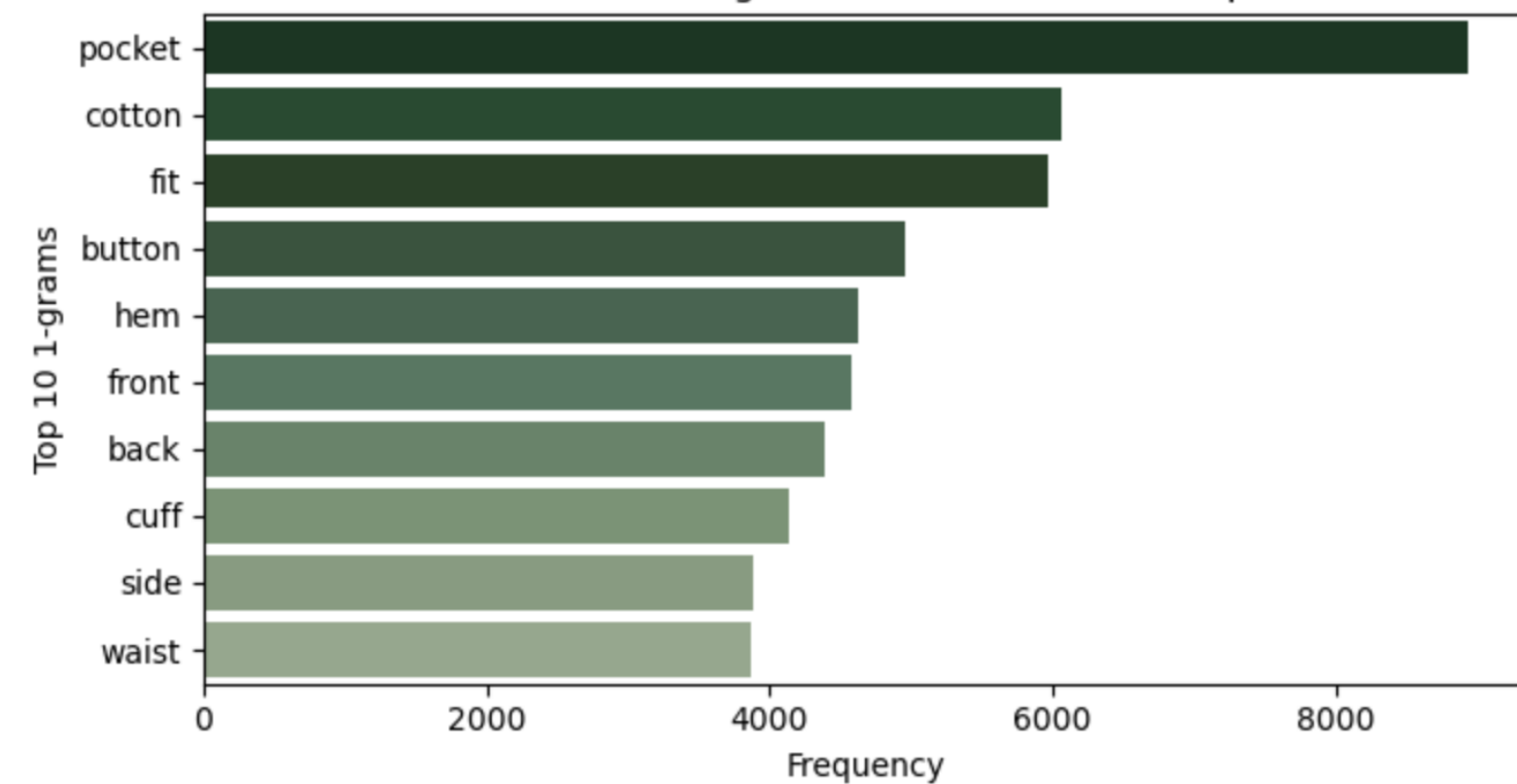
Most Common Unigrams in Ladieswear Descriptions



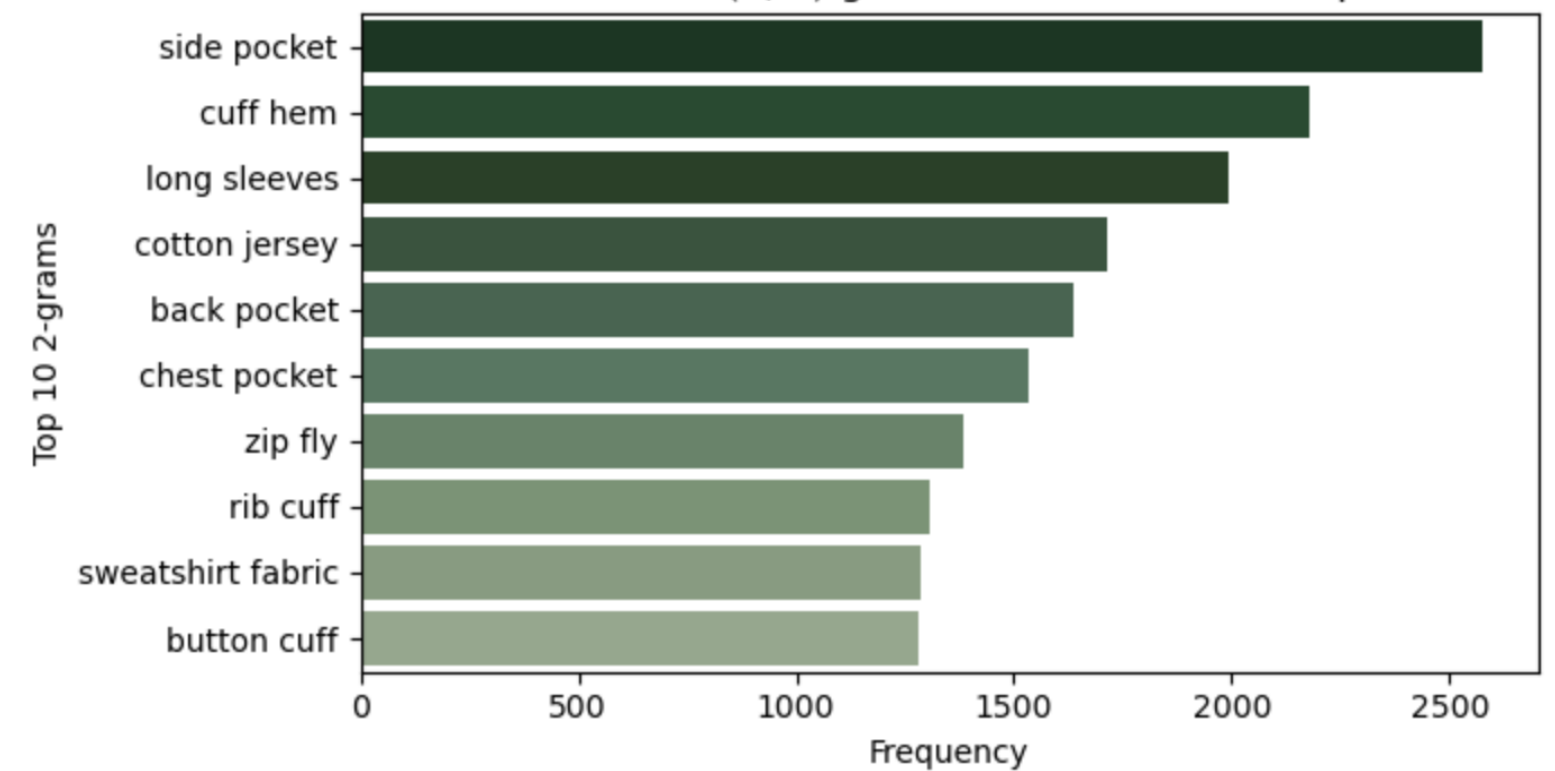
Most Common (2, 2)-grams in Ladieswear Descriptions



Most Common Unigrams in Menswear Descriptions



Most Common (2, 2)-grams in Menswear Descriptions





## Two Modeling Methods

### TF-IDF

Focuses on **important words** in each item's description.

Ex: Cotton blouse → Looks for “cotton”

### Bert

A more advanced model that understands the **context** and **meaning** of sentences.

Ex: Cotton blouse → Knows it's summerwear

Top 5 Similar Items

TF-IDF



Bert



# *Recommendation Based on Customers History*

We used BERT and looked at purchase history to personalize recommendations.



Then, for a sample customer, we found:

- ❖ Items they bought in the past
- ❖ Similar fashion items they might like next

# Recommendation Based on Customers History

## Customer's Past Purchases

613456009



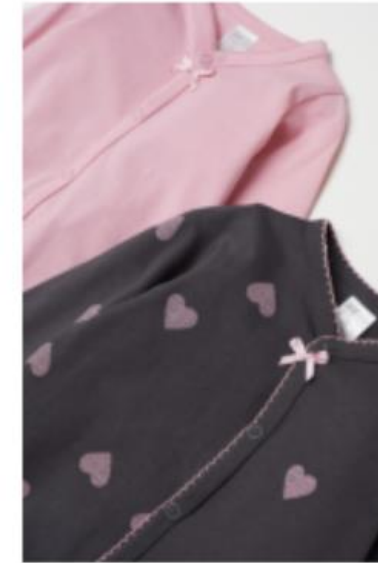
633675001



648719001



427114015



567475001



## Top 5 BERT-Based Recommendations

613456002



633792001



639344003



613456007



549253001



# *Key Insights*

1.

BERT provided more  
accurate and  
relevant  
recommendations

2.

Recommendations  
can be enhanced  
even further by using  
customer purchase  
history

3.

Fashion descriptions  
alone carry a lot of  
hidden patterns

# *Future Ideas*

1.

Learn from  
Other Customers  
Behaviour

2.

Build a small demo  
app to test live  
recommendations

*Thank you!*